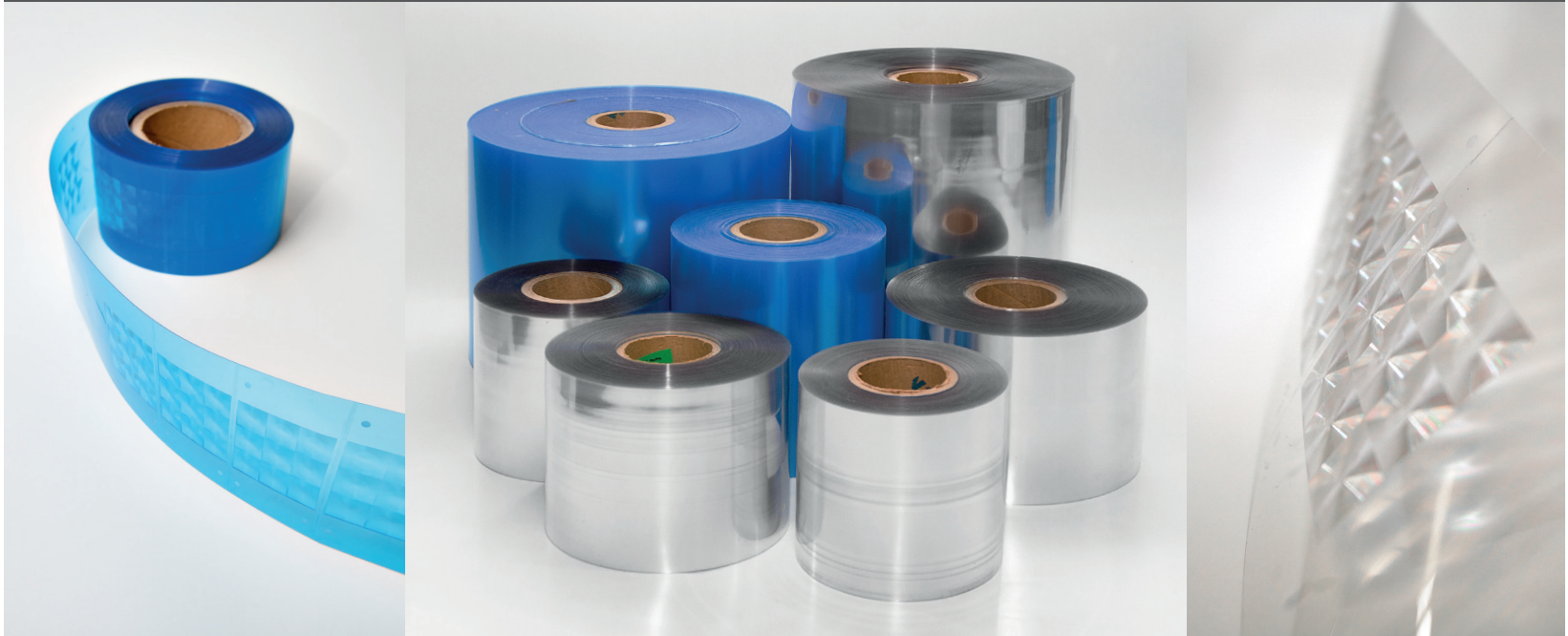


# NANOCOMP

## MATERIALS FOR ROLL TO ROLL PRODUCTION



### MATERIAL STRUCTURE OF PRODUCTION ROLL

Nanocomp uses commercial thin plastic foils together with in-house developed UV-curable lacquers. This enables production of unique products for optical applications by UV-R2R embossing technology. Substrate materials are available in standard thicknesses and customized web widths. Material performance in varying environmental and weather conditions is ensured by extensive testing.

Removable protective film

Embossed microstructured coating (< 20  $\mu\text{m}$ )

Substrate film PET / PC / PMMA / TPU  
thickness 12–600  $\mu\text{m}$

Removable protective film

**Nanocomp Ltd** is a high-tech company with 20 years of experience in the field of diffractive optics. Nanocomp provides versatile solutions for global customers focusing on design, tooling and mass production of thin foil optics.

**Nanocomp Oy Ltd**

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## KEY FEATURES

| Substrate film | Features   |
|----------------|--|
| PC             | <ul style="list-style-type: none"> <li>• standard thicknesses 75, 125, 175, 250, 375 and 500 µm</li> <li>• high optical transparency</li> <li>• high heat resistance</li> </ul>  |
| PMMA           | <ul style="list-style-type: none"> <li>• standard thicknesses 75, 125, 175, 250, 375 and 500 µm</li> <li>• high optical transparency</li> <li>• good weathering and UV resistance</li> <li>• very good scratch resistance</li> </ul> |
| PET            | <ul style="list-style-type: none"> <li>• standard thicknesses 23, 50, 75, 175 and 250 µm</li> <li>• high optical transparency</li> <li>• outstanding heat resistance</li> </ul>  |
| TPU            | <ul style="list-style-type: none"> <li>• standard thicknesses 180 and 200 µm</li> <li>• elastic</li> <li>• very good UV resistance and outdoor properties</li> </ul>   |

## RELIABILITY TESTS

| ITEM                            | Unit  | Name  | Spec.  | Test method  | Test instrument/<br>conditions |
|---------------------------------|---|-------|--|--|--------------------------------|
| Adhesion of lacquer to basefilm |   | A0-A5 | A0-A1=good, A2-A3=fair, A4-A5=poor                     | Adhesion test for coated/painted surfaces (ISO 2409) | Cross-cut grid method          |
| Dashboard test                  | 85°C↔30°C / 20%RH, 3 Cycles, 1 hr ramp up, 6hr dwell, 1hr ramp down |       | Meet dimensional and adhesion specification after test | Air blowing across module face                       | Cross-cut grid method          |
| Heat soak                       | 60 °C / 90% RH, 72 hours  |       |  | Air blowing across module face                       | Temperature & Humidity Chamber |
| Low temperature resistance      | -40 °C, 120 hours   |       |  | Air blowing across module face                       | Temperature & Humidity Chamber |
| Thermal cycling (hot/cold)      | -40°C/85°C (3 hour cycle, 33 cycles)                                |       |  | Air blowing across module face                       | Temperature & Humidity Chamber |
| Heat resistance                 | 85°C/ 20% RH, 500 hours   |       |  | Air blowing across module face                       | Temperature & Humidity Chamber |

## ADHESION

|                            | PC        | PMMA      | PET       |
|----------------------------|-----------|-----------|-----------|
| Dashboard                  | excellent | excellent | excellent |
| Heat soak                  | excellent | excellent | excellent |
| Low temperature resistance | excellent | excellent | excellent |
| Thermal cycling            | excellent | excellent | excellent |
| Heat resistance 100        | excellent | excellent | excellent |
| Heat resistance 200        | excellent | excellent | excellent |
| Heat resistance 300        | excellent | excellent | excellent |
| Heat resistance 400        | excellent | excellent | excellent |
| Heat resistance 500        | excellent | excellent | excellent |

■ excellent  
■ fair  
■ poor

## DIMENSIONAL STABILITY

|                            | PC        | PMMA      | PET       |
|----------------------------|-----------|-----------|-----------|
| Dashboard                  | excellent | excellent | excellent |
| Heat soak                  | excellent | excellent | excellent |
| Low temperature resistance | excellent | excellent | excellent |
| Thermal cycling            | excellent | excellent | excellent |
| Heat resistance 100        | excellent | excellent | excellent |
| Heat resistance 200        | excellent | excellent | excellent |
| Heat resistance 300        | excellent | excellent | excellent |
| Heat resistance 400        | excellent | fair      | excellent |
| Heat resistance 500        | excellent | fair      | excellent |